Specifications

SUPPLY VOLTAGE
- •12 to 24 VDC
- •Polarity Protected

CURRENT REQUIREMENTS
- •85 mA (exclusive of load)

OUTPUT TRANSISTORS
- •(1) NPN and (1) PNP Output transistor:
- •NPN: Sink up to 150 mA
- •PNP: Source up to 150 mA
- •Momentary short circuit protected
- •Outputs protected from pulsing during power up
- •Light/dark switch determines Output Status:
  Light = Light "ON" operate
  Dark = Dark "ON" operate

RESPONSE TIME
- •Minimum duration of input event
- •Light state response = 50 microseconds
- •Dark state response = 140 microseconds
- •Leading edge Variation less than 20 microseconds

HYSTERESIS
- •Less than 400 millivolts for maximum sensitivity and resolution

LED LIGHT SOURCE
- •Pulse modulation rate 45 KHZ
- •Choice of color:
  - **A.** Infrared = 880nm
  - **B.** Red = 660nm
  - **C.** White = Broadband Color Spectrum
  - **D.** Blue = 480nm

LIGHT IMMUNITY
- •Responds to sensor's pulsed modulated light source
- •Immune to most ambient light

OFFSET/EDR ADJUSTMENT
- •Sets initial level on CONTRAST INDICATOR in relation to mid-scale switch point of 5 – functions as sensitivity adjustment
- •Controls Enhanced Dynamic Range circuit (EDR™) which functions to avoid saturation

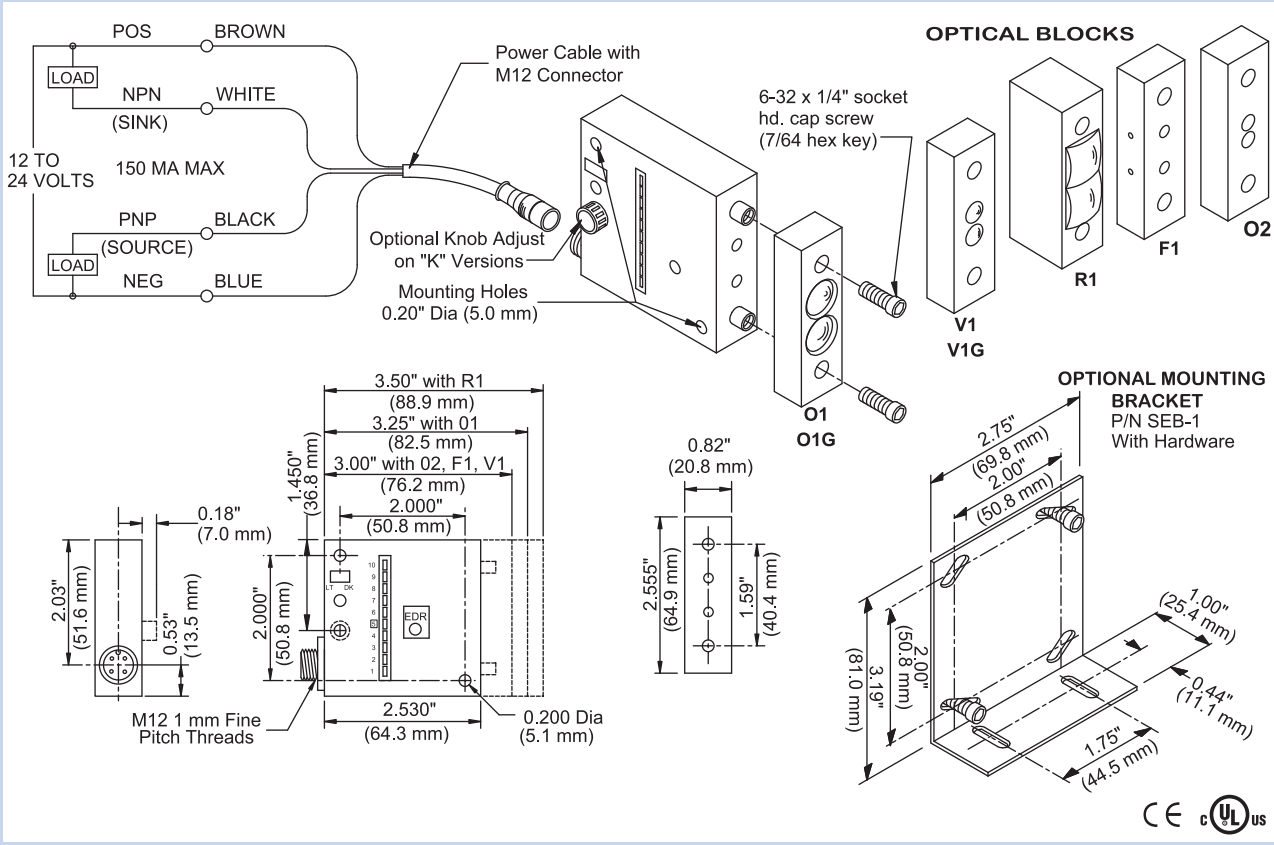
INDICATORS
- **OUTPUT INDICATOR** RED LED illuminates and the NPN or PNP outputs switch to the opposite state when returned light level exceeds "5" on the CONTRAST INDICATOR
- **EDR™ INDICATOR** - Intensity of GREEN LED provides indication of where in the dynamic operating range the offset, EDR™ adjustment has been set
- FULLY LIT: Operating near saturation
- OFF: Operating near maximum sensing range
- **CONTRAST INDICATOR** – Displays scaled reading of sensor's response to contrasting light levels (light vs. dark) on a 10 bar LED display

AMBIENT TEMPERATURE
- - 40°C to 70°C (- 40°F to 158°F)

RUGGED CONSTRUCTION
- •Chemical resistant, high impact polycarbonate housing
- •Waterproof, NEMA 4X, 6P and IP67 enclosure ratings
- •Epoxy encapsulated for mechanical strength

Product subject to change without notice.
Consult Factory for RoHS Compliance.

Connections and Dimensions SMARTEYE® MARK II PHOTOELECTRIC SENSOR



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CONGRATULATIONS!

You have just purchased a high performance SMARTEYE Mark II photoelectric sensor. The SMARTEYE Mark II has higher speed of response (50 microseconds) and even higher gain than the original SMARTEYE. These improved performance attributes allow the sensor to resolve the most difficult sensing tasks. As a result of the Mark II sensor's increased sensitivity, it is necessary to alter the original SMARTEYE setup procedure.

Simplified Setup Procedures

NOTE: The original SMARTEYE setup procedures called for a Light State setting of 9 to 10 on the Contrast Indicator. To obtain the correct Light State setting on a SMARTEYE Mark II, please follow these simple instructions:

1. Aim the sensor at the target in the bright-state condition.
2. Adjust the offset adjustment to obtain a reading of 10. Then, continue to rotate the adjustment clockwise ¼ of a turn.

This is generally the only setup procedure requirement. However, if in turn, the Dark State does not result in a reading of zero (all LED's off), it may be necessary to re-adjust the offset so that the Light State/Dark State contrast deviation, as displayed on the Contrast Indicator, straddles the switchpoint of "5". On rare occasions when this procedure is required, it may be advisable to make the offset adjustment in dynamic conditions when input events are ongoing.

Contrasting Light Levels

When operating in the Beam Break mode, the intensity of the light beam reaching the receiving lens is in its brightest or lightest state condition before an object in introduced into the light beam path. Introducing an object into the light beam path will block out or diminish the intensity of the received light beam, resulting in the darkest state condition.

In the Beam Make mode, the **darkest state** condition is before an object is placed in the light beam path. The **lightest state** condition is when an object is introduced into the light beam path so as to bounce or reflect the light beam to the receiving lens.

The amount of difference or deviation of the intensity of the light beam in its lightest state condition vs. the intensity of the received light beam in the darkest state is called **"Contrast"**.

The sensing task of any digital switching photoelectric sensor is to respond to and resolve the difference between the contrasting light levels and switch its output accordingly.

These contrasting light levels define the degree of difficulty of the sensing task.